

## SEQUENCE LISTING

<110> Garcia-Calvo, Margarita

<120> NPC1L1 (NPC3) AND METHODS OF IDENTIFYING LIGANDS THEREOF

<130> 36134-PCT 074669.0111

<140> To Be Assigned

<141> 2005-01-14

<150> US 60/537,341

<151> 2004-01-16

<160> 51

<170> PatentIn version 3.1

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<212> DNA

<213> Rattus sp.

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<221> CDS

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gcg gcc cag ggt gag cta tac aca ccc aaa cac gaa gct ggg gtc tgc	96
Ala Ala Gln Gly Glu Leu Tyr Thr Pro Lys His Glu Ala Gly Val Cys	
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acc ttt tac gaa gag tgc ggg aaa aac cca gag ctc tct gga ggc ctc	144
Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu	

35	40	45	
acg tca cta tcc aat gta tcc tgc ctg tct aac acc ccg gcc cgc cac Thr Ser Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg His 50 55 60			192
gtc acg ggt gaa cac ctg gct ctt ctc cag cgc atc tgt ccc cgc ctg Val Thr Gly Glu His Leu Ala Leu Leu Gln Arg Ile Cys Pro Arg Leu 65 70 75 80			240
tac aac ggc ccc aat acc act ttt gcc tgt tgc tct acc aag cag ctg Tyr Asn Gly Pro Asn Thr Thr Phe Ala Cys Cys Ser Thr Lys Gln Leu 85 90 95			288
ctg tcc tta gaa agc agc atg tcc atc acc aag gcc ctt ctc acg cgc Leu Ser Leu Glu Ser Ser Met Ser Ile Thr Lys Ala Leu Leu Thr Arg 100 105 110			336
tgc ccg gcc tgc tct gac aat ttt gtg agc tta cac tgc cac aac act Cys Pro Ala Cys Ser Asp Asn Phe Val Ser Leu His Cys His Asn Thr 115 120 125			384
tgc agc cct gac cag agc ctc ttc atc aac gtc acc cgg gtg gtt gag Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Glu 130 135 140			432
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cgc cct tcc ttc tac atg ggt cgc atg cca ggc tgg ctg gcc ctc atc			864

Arg	Pro	Ser	Phe	Tyr	Met	Gly	Arg	Met	Pro	Gly	Trp	Leu	Ala	Leu	Ile		
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atc	atc	ttc	act	gct	gtc	ttt	gtg	ttg	ctc	tct	gca	gtc	ctt	gtg	cgt		912
Ile	Ile	Phe	Thr	Ala	Val	Phe	Val	Leu	Leu	Ser	Ala	Val	Leu	Val	Arg		
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ctc	cga	gtg	gtt	tcc	aac	agg	aac	aag	aac	aag	gca	gaa	ggc	ccc	cag		960
Leu	Arg	Val	Val	Ser	Asn	Arg	Asn	Lys	Asn	Lys	Ala	Glu	Gly	Pro	Gln		
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gaa	gcc	ccc	aaa	ctc	cct	cat	aag	cac	aaa	ctc	tca	ccc	cat	acc	atc		1008
Glu	Ala	Pro	Lys	Leu	Pro	His	Lys	His	Lys	Leu	Ser	Pro	His	Thr	Ile		
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Leu	Gly	Arg	Phe	Phe	Gln	Asn	Trp	Gly	Thr	Arg	Val	Ala	Ser	Trp	Pro		
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Leu	Thr	Val	Leu	Ala	Leu	Ser	Phe	Ile	Val	Val	Ile	Ala	Leu	Ala	Ala		
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Gly	Leu	Thr	Phe	Ile	Glu	Leu	Thr	Thr	Asp	Pro	Val	Glu	Leu	Trp	Ser		
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gcc	ccc	aag	agc	cag	gcc	cgg	aaa	gag	aag	tct	ttc	cat	gat	gag	cat		1200
Ala	Pro	Lys	Ser	Gln	Ala	Arg	Lys	Glu	Lys	Ser	Phe	His	Asp	Glu	His		
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Phe	Gly	Pro	Phe	Phe	Arg	Thr	Asn	Gln	Ile	Phe	Val	Thr	Ala	Arg	Asn		
			405					410						415			
agg	tcc	agc	tac	aag	tac	gac	tcc	cta	ctg	cta	ggg	tcc	aag	aac	ttc		1296
Arg	Ser	Ser	Tyr	Lys	Tyr	Asp	Ser	Leu	Leu	Leu	Gly	Ser	Lys	Asn	Phe		
			420					425					430				
agt	ggg	atc	ctg	tcc	ctg	gac	ttc	ctg	ctg	gag	ctg	ctg	gag	ctt	cag		1344
Ser	Gly	Ile	Leu	Ser	Leu	Asp	Phe	Leu	Leu	Glu	Leu	Leu	Glu	Leu	Gln		
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gag	agg	ctt	cga	cac	ctg	caa	gtg	tgg	tcc	cct	gag	gca	gag	cgc	aac		1392
Glu	Arg	Leu	Arg	His	Leu	Gln	Val	Trp	Ser	Pro	Glu	Ala	Glu	Arg	Asn		
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Ser	Leu	Ser	Asp	Cys	Cys	Val	Asn	Ser	Leu	Leu	Gln	Tyr	Phe	Gln	Asn		
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aac	cgc	acc	ctc	ctg	atg	ctc	acg	gcc	aac	cag	act	ctg	aat	ggc	cag		1536
Asn	Arg	Thr	Leu	Leu	Met	Leu	Thr	Ala	Asn	Gln	Thr	Leu	Asn	Gly	Gln		
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acc tcc ctg gtg gac tgg aag gac cat ttc ctc tac tgt gca aat gcc Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala 515 520 525	1584
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gag gag gct ttc ttg aag gaa atg gaa tcc ttc cag agg aac aca agt Glu Glu Ala Phe Leu Lys Glu Met Glu Ser Phe Gln Arg Asn Thr Ser 595 600 605	1824
gac aag ttc cag gtt gcg ttc tca gct gag cgc tct ctg gag gat gag Asp Lys Phe Gln Val Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu 610 615 620	1872
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ctg gtg cta gct gtg gga gct gac aac atc ttc atc ttt gtt ctt gag Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu 705 710 715 720	2160
tac cag agg cta cct agg atg cct ggg gaa cag cga gag gct cac att Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile 725 730 735	2208
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ctg ctc cag atg act gcc ttt gtg gcc ctg ctc tcc ctg gat agc aag Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys 785 790 795 800	2400
agg cag gag gcc tct cgc ccg gat gtc tta tgc tgc ttt tca acc cgg Arg Gln Glu Ala Ser Arg Pro Asp Val Leu Cys Cys Phe Ser Thr Arg 805 810 815	2448
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ctg acc ccg tcc tcc tcc tgc tgt cgc ctt tat ata cgt ggc ccc cat Leu Thr Pro Ser Ser Ser Cys Cys Arg Leu Tyr Ile Arg Gly Pro His 965 970 975	2928
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gat gct act gtc ttc atg ggc agt gcg gtg ttt gct gga qtg qcc 365 4



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cag	ctt	att	cag	atc	ttc	ttc	ttc	cgc	ctc	aac	ctt	ctg	atc	acc	3744	
Gln	Leu	Ile	Gln	Ile	Phe	Phe	Phe	Arg	Leu	Asn	Leu	Leu	Ile	Thr		
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ttg	ctg	ggt	ctg	ctg	cat	ggc	ctg	gtc	ttc	ctg	ccg	gtt	gtc	ctc	3789	
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aaa	cta	gcc	agc	gag	gca	gca	gtg	gcc	cca	gag	cct	tct	tgc	cca	3879	
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cag	tac	ccc	tcc	cct	gct	gat	gcg	gat	gcc	aat	gtt	aac	tac	ggc	3924	
Gln	Tyr	Pro	Ser	Pro	Ala	Asp	Ala	Asp	Ala	Asn	Val	Asn	Tyr	Gly		
1295						1300					1305					
ttt	gcc	cca	gaa	ctt	gcc	cac	gga	gct	aat	gct	gct	aga	agc	tct	3969	
Phe	Ala	Pro	Glu	Leu	Ala	His	Gly	Ala	Asn	Ala	Ala	Arg	Ser	Ser		
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ttg	ccc	aaa	agt	gac	caa	aag	ttc	taa							3996	
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&lt;211&gt; 1331

&lt;212&gt; PRT

&lt;213&gt; Rattus sp.

&lt;400&gt; 2

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Thr	Phe	Tyr	Glu	Glu	Cys	Gly	Lys	Asn	Pro	Glu	Leu	Ser	Gly	Gly	Leu
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Thr Ser Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg His  
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Val Thr Gly Glu His Leu Ala Leu Leu Gln Arg Ile Cys Pro Arg Leu  
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Tyr Asn Gly Pro Asn Thr Thr Phe Ala Cys Cys Ser Thr Lys Gln Leu  
 85 90 95

Leu Ser Leu Glu Ser Ser Met Ser Ile Thr Lys Ala Leu Leu Thr Arg  
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Cys Pro Ala Cys Ser Asp Asn Phe Val Ser Leu His Cys His Asn Thr  
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Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Glu  
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Arg Gly Ala Gly Glu Pro Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr  
 145 150 155 160

Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Gln Val Arg  
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Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr  
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Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp  
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Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu  
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Pro Gly Gln Ala Leu Pro Asp Gly Ile Gln Pro Leu Asn Gly Lys Ile  
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Ala Pro Cys Asn Glu Ser Gln Gly Asp Asp Ser Ala Val Cys Ser Cys  
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Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Glu Ala Leu  
 260 265 270

Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile  
 275 280 285



Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Ala Val Leu Val Arg  
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 Leu Arg Val Val Ser Asn Arg Asn Lys Asn Lys Ala Glu Gly Pro Gln  
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 Glu Ala Pro Lys Leu Pro His Lys His Lys Leu Ser Pro His Thr Ile  
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 Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser  
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 Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ser Phe His Asp Glu His  
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 Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Arg Asn  
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 Ser Gly Ile Leu Ser Leu Asp Phe Leu Leu Glu Leu Leu Glu Leu Gln  
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 Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Tyr Asn Thr  
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 Ser Leu Ser Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn  
 485 490 495  
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 500 505 510  
 Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala

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Cys Ser Arg Val Ala Val Glu Ser Lys Ala Thr Leu Gly Leu Gly Gly 660 665 670		
Val Ile Val Val Leu Gly Ala Val Leu Ala Ala Met Gly Phe Tyr Ser 675 680 685		
Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe 690 695 700		
Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu 705 710 715 720		
Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile 725 730 735		
Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu 740 745 750		

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala  
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Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Leu Asp Phe  
 770 775 780

Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys  
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Arg Gln Glu Ala Ser Arg Pro Asp Val Leu Cys Cys Phe Ser Thr Arg  
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Lys Leu Pro Pro Pro Lys Glu Lys Glu Gly Leu Leu Leu Arg Phe Phe  
 820 825 830

Arg Lys Ile Tyr Ala Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val  
 835 840 845

Val Met Leu Leu Phe Leu Thr Leu Phe Gly Ala Asn Leu Tyr Leu Met  
 850 855 860

Cys Asn Ile Asn Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp  
 865 870 875 880

Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val  
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Gly Pro Pro Val Tyr Phe Val Thr Thr Ser Gly Phe Asn Phe Ser Ser  
 900 905 910

Glu Ala Gly Met Asn Ala Thr Cys Ser Ser Ala Gly Cys Lys Ser Phe  
 915 920 925

Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asp Gln Ser  
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Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp  
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Leu Thr Pro Ser Ser Ser Cys Cys Arg Leu Tyr Ile Arg Gly Pro His  
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Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys  
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Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr Ala Glu Gln  
995 1000 1005

Phe His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Pro Pro Asn Ile  
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Arg Cys Pro Lys Gly Gly Leu Ala Ala Tyr Arg Thr Ser Val Asn  
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Leu Ser Ser Asp Gly Gln Val Ile Ala Ser Gln Phe Met Ala Tyr  
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His Lys Pro Leu Arg Asn Ser Gln Asp Phe Thr Glu Ala Leu Arg  
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Ala Ser Arg Leu Leu Ala Ala Asn Ile Thr Ala Asp Leu Arg Lys  
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Val Pro Gly Thr Asp Pro Asn Phe Glu Val Phe Pro Tyr Thr Ile  
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Ser Asn Val Phe Tyr Gln Gln Tyr Leu Thr Val Leu Pro Glu Gly  
1100 1105 1110

Ile Phe Thr Leu Ala Leu Cys Phe Val Pro Thr Phe Val Val Cys  
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Tyr Leu Leu Leu Gly Leu Asp Met Cys Ser Gly Ile Leu Asn Leu  
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Leu Ser Ile Ile Met Ile Leu Val Asp Thr Ile Gly Leu Met Ala  
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Val Trp Gly Ile Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val  
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Thr Ala Val Gly Met Ser Val Glu Phe Val Ser His Ile Thr Arg  
1175 1180 1185

Ser Phe Ala Val Ser Thr Lys Pro Thr Arg Leu Glu Arg Ala Lys  
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Asp Ala Thr Val Phe Met Gly Ser Ala Val Phe Ala Gly Val Ala  
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Met Thr Asn Phe Pro Gly Ile Leu Ile Leu Gly Phe Ala Gln Ala  
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Gln Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr  
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Leu Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Val Leu  
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Ser Tyr Leu Gly Pro Asp Val Asn Gln Ala Leu Val Gln Glu Glu  
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Lys Leu Ala Ser Glu Ala Ala Val Ala Pro Glu Pro Ser Cys Pro  
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Gln Tyr Pro Ser Pro Ala Asp Ala Asp Ala Asn Val Asn Tyr Gly  
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 1 5 10 15

48

cgc	ttg	gcc	cag	agt	gag	cct	tac	aca	acc	atc	cac	cag	cct	ggc	tac	96
Arg	Leu	Ala	Gln	Ser	Glu	Pro	Tyr	Thr	Thr	Ile	His	Gln	Pro	Gly	Tyr	
		20						25					30			
tgc	gcc	ttc	tat	gac	gaa	tgt	ggg	aag	aac	cca	gag	ctg	tct	gga	agc	144
Cys	Ala	Phe	Tyr	Asp	Glu	Cys	Gly	Lys	Asn	Pro	Glu	Leu	Ser	Gly	Ser	
		35					40					45				
ctc	atg	aca	ctc	tcc	aac	gtg	tcc	tgc	ctg	tcc	aac	acg	ccg	gcc	cgc	192
Leu	Met	Thr	Leu	Ser	Asn	Val	Ser	Cys	Leu	Ser	Asn	Thr	Pro	Ala	Arg	
	50					55					60					
aag	atc	aca	ggt	gat	cac	ctg	atc	cta	tta	cag	aag	atc	tgc	ccc	cgc	240
Lys	Ile	Thr	Gly	Asp	His	Leu	Ile	Leu	Leu	Gln	Lys	Ile	Cys	Pro	Arg	
65					70					75					80	
ctc	tac	acc	ggc	ccc	aac	acc	caa	gcc	tgc	tgc	tcc	gcc	aag	cag	ctg	288
Leu	Tyr	Thr	Gly	Pro	Asn	Thr	Gln	Ala	Cys	Cys	Ser	Ala	Lys	Gln	Leu	
				85					90					95		
gta	tca	ctg	gaa	gcg	agt	ctg	tcg	atc	acc	aag	gcc	ctc	ctc	acc	cgc	336
Val	Ser	Leu	Glu	Ala	Ser	Leu	Ser	Ile	Thr	Lys	Ala	Leu	Leu	Thr	Arg	
			100					105					110			
tgc	cca	gcc	tgc	tct	gac	aat	ttt	gtg	aac	ctg	cac	tgc	cac	aac	acg	384
Cys	Pro	Ala	Cys	Ser	Asp	Asn	Phe	Val	Asn	Leu	His	Cys	His	Asn	Thr	
		115					120					125				
tgc	agc	ccc	aat	cag	agc	ctc	ttc	atc	aat	gtg	acc	cgc	gtg	gcc	cag	432
Cys	Ser	Pro	Asn	Gln	Ser	Leu	Phe	Ile	Asn	Val	Thr	Arg	Val	Ala	Gln	
	130					135					140					
cta	ggg	gct	gga	caa	ctc	cca	gct	gtg	gtg	gcc	tat	gag	gcc	ttc	tac	480
Leu	Gly	Ala	Gly	Gln	Leu	Pro	Ala	Val	Val	Ala	Tyr	Glu	Ala	Phe	Tyr	
145					150					155					160	
cag	cat	agc	ttt	gcc	gag	cag	agc	tat	gac	tcc	tgc	agc	cgt	gtg	cgc	528
Gln	His	Ser	Phe	Ala	Glu	Gln	Ser	Tyr	Asp	Ser	Cys	Ser	Arg	Val	Arg	
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gtc	cct	gca	gct	gcc	acg	ctg	gct	gtg	ggc	acc	atg	tgt	ggc	gtg	tat	576
Val	Pro	Ala	Ala	Ala	Thr	Leu	Ala	Val	Gly	Thr	Met	Cys	Gly	Val	Tyr	
				180				185					190			
ggc	tct	gcc	ctt	tgc	aat	gcc	cag	cgc	tgg	ctc	aac	ttc	cag	gga	gac	624
Gly	Ser	Ala	Leu	Cys	Asn	Ala	Gln	Arg	Trp	Leu	Asn	Phe	Gln	Gly	Asp	
		195					200					205				
aca	ggc	aat	ggt	ctg	gcc	cca	ctg	gac	atc	acc	ttc	cac	ctc	ttg	gag	672
Thr	Gly	Asn	Gly	Leu	Ala	Pro	Leu	Asp	Ile	Thr	Phe	His	Leu	Leu	Glu	
	210					215					220					
cct	ggc	cag	gcc	gtg	ggg	agt	ggg	att	cag	cct	ctg	aat	gag	ggg	gtt	720
Pro	Gly	Gln	Ala	Val	Gly	Ser	Gly	Ile	Gln	Pro	Leu	Asn	Glu	Gly	Val	
225					230					235					240	
gca	cgt	tgc	aat	gag	tcc	caa	ggt	gac	gac	gtg	gcg	acc	tgc	tcc	tgc	768
Ala	Arg	Cys	Asn	Glu	Ser	Gln	Gly	Asp	Asp	Val	Ala	Thr	Cys	Ser	Cys	
				245					250					255		

caa gac tgt gct gca tcc tgt cct gcc ata gcc cgc ccc cag gcc ctc Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu 260 265 270	816
gac tcc acc ttc tac ctg ggc cag atg ccg ggc agt ctg gtc ctc atc Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile 275 280 285	864
atc atc ctc tgc tct gtc ttc gct gtg gtc acc atc ctg ctt gtg gga Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly 290 295 300	912
ttc cgt gtg gcc ccc gcc agg gac aaa agc aag atg gtg gac ccc aag Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys 305 310 315 320	960
aag ggc acc agc ctc tct gac aag ctc agc ttc tcc acc cac acc ctc Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu 325 330 335	1008
ctt ggc cag ttc ttc cag ggc tgg ggc acg tgg gtg gct tcg tgg cct Leu Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro 340 345 350	1056
ctg acc atc ttg gtg cta tct gtc atc ccg gtg gtg gcc ttg gca gcg Leu Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala 355 360 365	1104
ggc ctg gtc ttt aca gaa ctc act acg gac ccc gtg gag ctg tgg tcg Gly Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser 370 375 380	1152
gcc ccc aac agc caa gcc cgg agt gag aaa gct ttc cat gac cag cat Ala Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His 385 390 395 400	1200
ttc ggc ccc ttc ttc cga acc aac cag gtg atc ctg acg gct cct aac Phe Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn 405 410 415	1248
cgg tcc agc tac agg tat gac tct ctg ctg ctg ggg ccc aag aac ttc Arg Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe 420 425 430	1296
agc gga atc ctg gac ctg gac ttg ctg ctg gag ctg cta gag ctg cag Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln 435 440 445	1344
gag agg ctg cgg cac ctc cag gta tgg tcg ccc gaa gca cag cgc aac Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn 450 455 460	1392
atc tcc ctg cag gac atc tgc tac gcc ccc ctc aat ccg gac aat acc Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr 465 470 475 480	1440
agt ctc tac gac tgc tgc atc aac agc ctc ctg cag tat ttc cag aac Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn	1488



485								490				495				
aac Asn	cgc Arg	acg Thr	ctc Leu 500	ctg Leu	ctg Leu	ctc Leu	aca Thr	gcc Ala 505	aac Asn	cag Gln	aca Thr	ctg Leu	atg Met 510	ggg Gly	cag Gln	1536
acc Thr	tcc Ser	caa Gln 515	gtc Val	gac Asp	tgg Trp	aag Lys	gac Asp 520	cat His	ttt Phe	ctg Leu	tac Tyr	tgt Cys 525	gcc Ala	aat Asn	gcc Ala	1584
ccg Pro	ctc Leu 530	acc Thr	ttc Phe	aag Lys	gat Asp	ggc Gly 535	aca Thr	gcc Ala	ctg Leu	gcc Ala	ctg Leu 540	agc Ser	tgc Cys	atg Met	gct Ala	1632
gac Asp 545	tac Tyr	ggg Gly	gcc Ala	cct Pro	gtc Val 550	ttc Phe	ccc Pro	ttc Phe	ctt Leu	gcc Ala 555	att Ile	ggg Gly	ggg Gly	tac Tyr	aaa Lys 560	1680
gga Gly	aag Lys	gac Asp	tat Tyr	tct Ser 565	gag Glu	gca Ala	gag Glu	gcc Ala	ctg Leu 570	atc Ile	atg Met	acg Thr	ttc Phe	tcc Ser 575	ctc Leu	1728
aac Asn	aat Asn	tac Tyr	cct Pro 580	gcc Ala	ggg Gly	gac Asp	ccc Pro	cgt Arg 585	ctg Leu	gcc Ala	cag Gln	gcc Ala	aag Lys 590	ctg Leu	tgg Trp	1776
gag Glu	gag Glu	gcc Ala 595	ttc Phe	tta Leu	gag Glu	gaa Glu	atg Met 600	cga Arg	gcc Ala	ttc Phe	cag Gln	cgt Arg 605	cgg Arg	atg Met	gct Ala	1824
ggc Gly	atg Met 610	ttc Phe	cag Gln	gtc Val	acg Thr	ttc Phe 615	acg Thr	gct Ala	gag Glu	cgc Arg	tct Ser 620	ctg Leu	gaa Glu	gac Asp	gag Glu	1872
atc Ile 625	aat Asn	cgc Arg	acc Thr	aca Thr	gct Ala 630	gaa Glu	gac Asp	ctg Leu	ccc Pro	atc Ile 635	ttt Phe	gcc Ala	acc Thr	agc Ser	tac Tyr 640	1920
att Ile	gtc Val	ata Ile	ttc Phe	ctg Leu 645	tac Tyr	atc Ile	tct Ser	ctg Leu	gcc Ala 650	ctg Leu	ggc Gly	agc Ser	tat Tyr	tcc Ser 655	agc Ser	1968
tgg Trp	agc Ser	cga Arg	gtg Val 660	atg Met	gtg Val	gac Asp	tcc Ser	aag Lys 665	gcc Ala	acg Thr	ctg Leu	ggc Gly 670	ctc Leu	ggc Gly	ggg Gly	2016
gtg Val	gcc Ala	gtg Val 675	gtc Val	ctg Leu	gga Gly	gca Ala	gtc Val 680	atg Met	gct Ala	gcc Ala	atg Met	ggc Gly 685	ttc Phe	ttc Phe	tcc Ser	2064
tac Tyr	ttg Leu 690	ggt Gly	atc Ile	cgc Arg	tcc Ser	tcc Ser 695	ctg Leu	gtc Val	atc Ile	ctg Leu	caa Gln 700	gtg Val	gtt Val	cct Pro	ttc Phe	2112
ctg Leu 705	gtg Val	ctg Leu	tcc Ser	gtg Val	ggg Gly 710	gct Ala	gat Asp	aac Asn	atc Ile	ttc Phe 715	atc Ile	ttt Phe	gtt Val	ctc Leu	gag Glu 720	2160
tac	cag	agg	ctg	ccc	cgg	agg	cct	ggg	gag	cca	cga	gag	gtc	cac	att	2208

Tyr	Gln	Arg	Leu	Pro	Arg	Arg	Pro	Gly	Glu	Pro	Arg	Glu	Val	His	Ile	
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ggg	cga	gcc	cta	ggc	agg	gtg	gct	ccc	agc	atg	ctg	ttg	tgc	agc	ctc	2256
Gly	Arg	Ala	Leu	Gly	Arg	Val	Ala	Pro	Ser	Met	Leu	Leu	Cys	Ser	Leu	
			740					745					750			
tct	gag	gcc	atc	tgc	ttc	ttc	cta	ggg	gcc	ctg	acc	ccc	atg	cca	gct	2304
Ser	Glu	Ala	Ile	Cys	Phe	Phe	Leu	Gly	Ala	Leu	Thr	Pro	Met	Pro	Ala	
			755				760					765				
gtg	cgg	acc	ttt	gcc	ctg	acc	tct	ggc	ctt	gca	gtg	atc	ctt	gac	ttc	2352
Val	Arg	Thr	Phe	Ala	Leu	Thr	Ser	Gly	Leu	Ala	Val	Ile	Leu	Asp	Phe	
			770				775				780					
ctc	ctg	cag	atg	tca	gcc	ttt	gtg	gcc	ctg	ctc	tcc	ctg	gac	agc	aag	2400
Leu	Leu	Gln	Met	Ser	Ala	Phe	Val	Ala	Leu	Leu	Ser	Leu	Asp	Ser	Lys	
			785				790				795				800	
agg	cag	gag	gcc	tcc	cgg	ttg	gac	gtc	tgc	tgc	tgt	gtc	aag	ccc	cag	2448
Arg	Gln	Glu	Ala	Ser	Arg	Leu	Asp	Val	Cys	Cys	Cys	Val	Lys	Pro	Gln	
				805					810					815		
gag	ctg	ccc	ccg	cct	ggc	cag	gga	gag	ggg	ctc	ctg	ctt	ggc	ttc	ttc	2496
Glu	Leu	Pro	Pro	Pro	Gly	Gln	Gly	Glu	Gly	Leu	Leu	Leu	Gly	Phe	Phe	
				820				825					830			
caa	aag	gct	tat	gcc	ccc	ttc	ctg	ctg	cac	tgg	atc	act	cga	ggt	gtt	2544
Gln	Lys	Ala	Tyr	Ala	Pro	Phe	Leu	Leu	His	Trp	Ile	Thr	Arg	Gly	Val	
				835			840					845				
gtg	ctg	ctg	ctg	ttt	ctc	gcc	ctg	ttc	gga	gtg	agc	ctc	tac	tcc	atg	2592
Val	Leu	Leu	Leu	Phe	Leu	Ala	Leu	Phe	Gly	Val	Ser	Leu	Tyr	Ser	Met	
				850			855				860					
tgc	cac	atc	agc	gtg	gga	ctg	gac	cag	gag	ctg	gcc	ctg	ccc	aag	gac	2640
Cys	His	Ile	Ser	Val	Gly	Leu	Asp	Gln	Glu	Leu	Ala	Leu	Pro	Lys	Asp	
					870					875					880	
tcg	tac	ctg	ctt	gac	tat	ttc	ctc	ttt	ctg	aac	cgc	tac	ttc	gag	gtg	2688
Ser	Tyr	Leu	Leu	Asp	Tyr	Phe	Leu	Phe	Leu	Asn	Arg	Tyr	Phe	Glu	Val	
				885					890					895		
ggg	gcc	ccg	gtg	tac	ttt	gtt	acc	acc	ttg	ggc	tac	aac	ttc	tcc	agc	2736
Gly	Ala	Pro	Val	Tyr	Phe	Val	Thr	Thr	Leu	Gly	Tyr	Asn	Phe	Ser	Ser	
				900				905					910			
gag	gct	ggg	atg	aat	gcc	atc	tgc	tcc	agt	gca	ggc	tgc	aac	aac	ttc	2784
Glu	Ala	Gly	Met	Asn	Ala	Ile	Cys	Ser	Ser	Ala	Gly	Cys	Asn	Asn	Phe	
				915			920					925				
tcc	ttc	acc	cag	aag	atc	cag	tat	gcc	aca	gag	ttc	cct	gag	cag	tct	2832
Ser	Phe	Thr	Gln	Lys	Ile	Gln	Tyr	Ala	Thr	Glu	Phe	Pro	Glu	Gln	Ser	
				930			935					940				
tac	ctg	gcc	atc	cct	gcc	tcc	tcc	tgg	gtg	gat	gac	ttc	att	gac	tgg	2880
Tyr	Leu	Ala	Ile	Pro	Ala	Ser	Ser	Trp	Val	Asp	Asp	Phe	Ile	Asp	Trp	
					950					955					960	

ctg acc ccg tcc tcc tgc tgc cgc ctt tat ata tct ggc ccc aat aag	2928
Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys	
965 970 975	
gac aag ttc tgc ccc tcg acc gtc aac tct ctg aac tgc cta aag aac	2976
Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn	
980 985 990	
tgc atg agc atc acg atg ggc tct gtg agg ccc tcg gtg gag cag ttc	3024
Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe	
995 1000 1005	
cat aag tat ctt ccc tgg ttc ctg aac gac cgg ccc aac atc aaa	3069
His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys	
1010 1015 1020	
tgt ccc aaa ggc ggc ctg gca gca tac agc acc tct gtg aac ttg	3114
Cys Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu	
1025 1030 1035	
act tca gat ggc cag gtt tta gcc tcc agg ttc atg gcc tat cac	3159
Thr Ser Asp Gly Gln Val Leu Ala Ser Arg Phe Met Ala Tyr His	
1040 1045 1050	
aag ccc ctg aaa aac tca cag gat tac aca gaa gct ctg cgg gca	3204
Lys Pro Leu Lys Asn Ser Gln Asp Tyr Thr Glu Ala Leu Arg Ala	
1055 1060 1065	
gct cga gag ctg gca gcc aac atc act gct gac ctg cgg aaa gtg	3249
Ala Arg Glu Leu Ala Ala Asn Ile Thr Ala Asp Leu Arg Lys Val	
1070 1075 1080	
cct gga aca gac ccg gct ttt gag gtc ttc ccc tac acg atc acc	3294
Pro Gly Thr Asp Pro Ala Phe Glu Val Phe Pro Tyr Thr Ile Thr	
1085 1090 1095	
aat gtg ttt tat gag cag tac ctg acc atc ctc cct gag ggg ctc	3339
Asn Val Phe Tyr Glu Gln Tyr Leu Thr Ile Leu Pro Glu Gly Leu	
1100 1105 1110	
ttc atg ctc agc ctc tgc ctt gtg ccc acc ttc gct gtc tcc tgc	3384
Phe Met Leu Ser Leu Cys Leu Val Pro Thr Phe Ala Val Ser Cys	
1115 1120 1125	
ctc ctg ctg ggc ctg gac ctg cgc tcc ggc ctc ctc aac ctg ctc	3429
Leu Leu Leu Gly Leu Asp Leu Arg Ser Gly Leu Leu Asn Leu Leu	
1130 1135 1140	
tcc att gtc atg atc ctc gtg gac act gtc ggc ttc atg gcc ctg	3474
Ser Ile Val Met Ile Leu Val Asp Thr Val Gly Phe Met Ala Leu	
1145 1150 1155	
tgg gac atc agt tac aat gct gtg tcc ctc atc aac ctg gtc tcg	3519
Trp Asp Ile Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val Ser	
1160 1165 1170	
gcg gtg ggc atg tct gtg gag ttt gtg tcc cac att acc cgc tcc	3564
Ala Val Gly Met Ser Val Glu Phe Val Ser His Ile Thr Arg Ser	
1175 1180 1185	

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 Phe Ala Ile Ser Thr Lys Pro Thr Trp Leu Glu Arg Ala Lys Glu  
 1190 1195 1200  
 gcc acc atc tct atg gga agt gcg gtg ttt gca ggt gtg gcc atg 3654  
 Ala Thr Ile Ser Met Gly Ser Ala Val Phe Ala Gly Val Ala Met  
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 acc aac ctg cct ggc atc ctt gtc ctg ggc ctc gcc aag gcc cag 3699  
 Thr Asn Leu Pro Gly Ile Leu Val Leu Gly Leu Ala Lys Ala Gln  
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 ctc att cag atc ttc ttc ttc cgc ctc aac ctc ctg atc act ctg 3744  
 Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr Leu  
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 1250 1255 1260  
 tac gtg ggg cct gac gtt aac ccg gct ctg gca ctg gag cag aag 3834  
 Tyr Val Gly Pro Asp Val Asn Pro Ala Leu Ala Leu Glu Gln Lys  
 1265 1270 1275  
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 Arg Ala Glu Glu Ala Val Ala Ala Val Met Val Ala Ser Cys Pro  
 1280 1285 1290  
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 Asn His Pro Ser Arg Val Ser Thr Ala Asp Asn Ile Tyr Val Asn  
 1295 1300 1305  
 cac agc ttt gaa ggt tct atc aaa ggt gct ggt gcc atc agc aac 3969  
 His Ser Phe Glu Gly Ser Ile Lys Gly Ala Gly Ala Ile Ser Asn  
 1310 1315 1320  
 ttc ttg ccc aac aat ggg cgg cag ttc tga 3999  
 Phe Leu Pro Asn Asn Gly Arg Gln Phe  
 1325 1330

&lt;210&gt; 4

&lt;211&gt; 1332

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 4

Met Ala Glu Ala Gly Leu Arg Gly Trp Leu Leu Trp Ala Leu Leu Leu  
 1 5 10 15

Arg Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr

20					25					30					
Cys	Ala	Phe	Tyr	Asp	Glu	Cys	Gly	Lys	Asn	Pro	Glu	Leu	Ser	Gly	Ser
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Leu	Met	Thr	Leu	Ser	Asn	Val	Ser	Cys	Leu	Ser	Asn	Thr	Pro	Ala	Arg
	50					55					60				
Lys	Ile	Thr	Gly	Asp	His	Leu	Ile	Leu	Leu	Gln	Lys	Ile	Cys	Pro	Arg
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Leu	Tyr	Thr	Gly	Pro	Asn	Thr	Gln	Ala	Cys	Cys	Ser	Ala	Lys	Gln	Leu
				85					90					95	
Val	Ser	Leu	Glu	Ala	Ser	Leu	Ser	Ile	Thr	Lys	Ala	Leu	Leu	Thr	Arg
			100					105					110		
Cys	Pro	Ala	Cys	Ser	Asp	Asn	Phe	Val	Asn	Leu	His	Cys	His	Asn	Thr
		115					120					125			
Cys	Ser	Pro	Asn	Gln	Ser	Leu	Phe	Ile	Asn	Val	Thr	Arg	Val	Ala	Gln
	130					135					140				
Leu	Gly	Ala	Gly	Gln	Leu	Pro	Ala	Val	Val	Ala	Tyr	Glu	Ala	Phe	Tyr
145					150					155					160
Gln	His	Ser	Phe	Ala	Glu	Gln	Ser	Tyr	Asp	Ser	Cys	Ser	Arg	Val	Arg
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Val	Pro	Ala	Ala	Ala	Thr	Leu	Ala	Val	Gly	Thr	Met	Cys	Gly	Val	Tyr
			180					185					190		
Gly	Ser	Ala	Leu	Cys	Asn	Ala	Gln	Arg	Trp	Leu	Asn	Phe	Gln	Gly	Asp
		195					200					205			
Thr	Gly	Asn	Gly	Leu	Ala	Pro	Leu	Asp	Ile	Thr	Phe	His	Leu	Leu	Glu
	210					215					220				
Pro	Gly	Gln	Ala	Val	Gly	Ser	Gly	Ile	Gln	Pro	Leu	Asn	Glu	Gly	Val
225					230					235					240
Ala	Arg	Cys	Asn	Glu	Ser	Gln	Gly	Asp	Asp	Val	Ala	Thr	Cys	Ser	Cys
			245						250					255	

Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu  
 260 265 270

Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile  
 275 280 285

Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly  
 290 295 300

Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys  
 305 310 315 320

Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu  
 325 330 335

Leu Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro  
 340 345 350

Leu Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala  
 355 360 365

Gly Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser  
 370 375 380

Ala Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His  
 385 390 395 400

Phe Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn  
 405 410 415

Arg Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe  
 420 425 430

Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln  
 435 440 445

Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn  
 450 455 460

Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr  
 465 470 475 480

Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn  
 485 490 495

Asn Arg Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln  
 500 505 510

Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala  
 515 520 525

Pro Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala  
 530 535 540

Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys  
 545 550 555 560

Gly Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu  
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Asn Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp  
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<211> 4484

<212> DNA

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<212> DNA

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<220>

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<223> n is g or a or t or c

<400> 10

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Ser Ala Gln Gly Glu Leu Tyr Thr Pro Thr His Lys Ala Gly Phe Cys	
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Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu	
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Thr Ser Leu Ser Asn Ile Ser Cys Leu Ser Asn Thr Pro Ala Arg His	
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Val Thr Gly Asp His Leu Ala Leu Leu Gln Arg Val Cys Pro Arg Leu	
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Tyr Asn Gly Pro Asn Asp Thr Tyr Ala Cys Cys Ser Thr Lys Gln Leu	
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Cys Pro Ala Cys Ser Glu Asn Phe Val Ser Ile His Cys His Asn Thr	
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Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Gln	
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Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Arg Val Arg	
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Gly	Ser	Ala	Leu	Cys	Asn	Ala	Gln	Arg	Trp	Leu	Asn	Phe	Gln	Gly	Asp	
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Gln	Asp	Cys	Ala	Ala	Ser	Cys	Pro	Val	Ile	Pro	Pro	Pro	Pro	Ala	Leu	
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Ile	Ile	Phe	Thr	Ala	Val	Phe	Val	Leu	Leu	Ser	Val	Val	Leu	Val	Tyr	
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gaa	gcc	ccc	aac	ctc	cct	cgt	aag	cgc	aga	ttc	tca	cct	cac	act	gtc	1008
Glu	Ala	Pro	Asn	Leu	Pro	Arg	Lys	Arg	Arg	Phe	Ser	Pro	His	Thr	Val	
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Phe	Gly	Pro	Phe	Phe	Arg	Thr	Asn	Gln	Ile	Phe	Val	Thr	Ala	Lys	Asn	
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Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe	
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Ser Gly Ile Leu Ser Leu Asp Leu Leu Gln Glu Leu Leu Glu Leu Gln	
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gag aga ctt cga cac ctg caa gtg tgg tcc cat gag gca cag cgc aac	1392
Glu Arg Leu Arg His Leu Gln Val Trp Ser His Glu Ala Gln Arg Asn	
450 455 460	
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Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro His Asn Thr	
465 470 475 480	
agc ctc act gac tgc tgt gtc aac agc ctc ctt caa tac ttc cag aac	1488
Ser Leu Thr Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn	
485 490 495	
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Asn His Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln	
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acc tcc ctg gtg gac tgg aag gac cat ttc ctc tac tgt gcc aat gcc	1584
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515 520 525	
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Pro Leu Thr Tyr Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Ile Ala	
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Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln	
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Asp Lys Phe Gln Ile Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu	
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625 630 635 640	
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Leu Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg	

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Asn	Leu	Pro	Pro	Pro	Lys	Gln	Lys	Glu	Gly	Leu	Leu	Leu	Cys	Phe	Phe	
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Val	Leu	Leu	Leu	Phe	Leu	Val	Leu	Phe	Gly	Ala	Asn	Leu	Tyr	Leu	Met	
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Cys	Asn	Ile	Ser	Val	Gly	Leu	Asp	Gln	Asp	Leu	Ala	Leu	Pro	Lys	Asp	
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Ser	Leu	Thr	Gln	Lys	Ile	Gln	Tyr	Ala	Ser	Glu	Phe	Pro	Asn	Gln	Ser	
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Tyr	Val	Ala	Ile	Ala	Ala	Ser	Ser	Trp	Val	Asp	Asp	Phe	Ile	Asp	Trp	
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Lys	Asp	Glu	Phe	Cys	Pro	Ser	Thr	Asp	Thr	Ser	Phe	Asn	Cys	Leu	Lys	
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aac	tgc	atg	aac	cgc	act	ctg	ggt	ccc	gtg	aga	ccc	aca	aca	gaa	cag	3024
Asn	Cys	Met	Asn	Arg	Thr	Leu	Gly	Pro	Val	Arg	Pro	Thr	Thr	Glu	Gln	
		995					1000					1005				
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Phe	His	Lys	Tyr	Leu	Pro	Trp	Phe	Leu	Asn	Asp	Thr	Pro	Asn	Ile		
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aga	tgt	cct	aaa	ggg	ggc	cta	gca	gcg	tat	aga	acc	tct	gtg	aat		3114
Arg	Cys	Pro	Lys	Gly	Gly	Leu	Ala	Ala	Tyr	Arg	Thr	Ser	Val	Asn		
	1025					1030					1035					
ttg	agc	tca	gat	ggc	cag	att	ata	gcc	tcc	cag	ttc	atg	gcc	tac		3159
Leu	Ser	Ser	Asp	Gly	Gln	Ile	Ile	Ala	Ser	Gln	Phe	Met	Ala	Tyr		
	1040					1045					1050					
cac	aag	ccc	tta	cgg	aac	tca	cag	gac	ttt	aca	gaa	gct	ctc	cgg		3204
His	Lys	Pro	Leu	Arg	Asn	Ser	Gln	Asp	Phe	Thr	Glu	Ala	Leu	Arg		
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gca	tcc	cgg	ttg	cta	gca	gcc	aac	atc	aca	gct	gaa	cta	cgg	aag		3249
Ala	Ser	Arg	Leu	Leu	Ala	Ala	Asn	Ile	Thr	Ala	Glu	Leu	Arg	Lys		
	1070					1075					1080					
gtg	cct	ggg	aca	gat	ccc	aac	ttt	gag	gtc	ttc	cct	tac	acg	atc		3294
Val	Pro	Gly	Thr	Asp	Pro	Asn	Phe	Glu	Val	Phe	Pro	Tyr	Thr	Ile		
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tcc	aat	gtg	ttc	tac	cag	caa	tac	ctg	acg	gtt	ctc	cct	gag	gga		3339
Ser	Asn	Val	Phe	Tyr	Gln	Gln	Tyr	Leu	Thr	Val	Leu	Pro	Glu	Gly		
	1100					1105					1110					

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ctc tcc atc att atg atc ctc gtg gac acc atc ggc ctc atg gct Leu Ser Ile Ile Met Ile Leu Val Asp Thr Ile Gly Leu Met Ala 1145 1150 1155	3474
gtg tgg ggt atc agc tac aat gct gtg tcc ctc atc aac ctt gtc Val Trp Gly Ile Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val 1160 1165 1170	3519
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gat gct act atc ttc atg ggc agt gcg gtg ttt gct gga gtg gcc Asp Ala Thr Ile Phe Met Gly Ser Ala Val Phe Ala Gly Val Ala 1205 1210 1215	3654
atg acc aac ttc ccg ggc atc ctc atc ctg ggc ttt gct cag gcc Met Thr Asn Phe Pro Gly Ile Leu Ile Leu Gly Phe Ala Gln Ala 1220 1225 1230	3699
cag ctt atc cag att ttc ttc ttc cgc ctc aac ctc ctg atc acc Gln Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr 1235 1240 1245	3744
ttg ctg ggt ctg cta cac ggc ctg gtc ttc ctg ccc gtt gtc ctc Leu Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Val Leu 1250 1255 1260	3789
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aaa cta gcc act gag gca gcc atg gtc tca gag cct tct tgc cca Lys Leu Ala Thr Glu Ala Ala Met Val Ser Glu Pro Ser Cys Pro 1280 1285 1290	3879
cag tac ccc ttc ccg gct gat gca aac acc agt gac tat gtt aac Gln Tyr Pro Phe Pro Ala Asp Ala Asn Thr Ser Asp Tyr Val Asn 1295 1300 1305	3924
tac ggc ttt aat cca gaa ttt atc cct gaa att aat gct gct agc Tyr Gly Phe Asn Pro Glu Phe Ile Pro Glu Ile Asn Ala Ala Ser 1310 1315 1320	3969
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<213> Mus sp.

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Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu  
35 40 45

Thr Ser Leu Ser Asn Ile Ser Cys Leu Ser Asn Thr Pro Ala Arg His  
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Val Thr Gly Asp His Leu Ala Leu Leu Gln Arg Val Cys Pro Arg Leu  
65 70 75 80

Tyr Asn Gly Pro Asn Asp Thr Tyr Ala Cys Cys Ser Thr Lys Gln Leu  
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Val Ser Leu Asp Ser Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg  
100 105 110

Cys Pro Ala Cys Ser Glu Asn Phe Val Ser Ile His Cys His Asn Thr  
115 120 125

Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Gln  
130 135 140

Arg Asp Pro Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr  
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Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Arg Val Arg  
165 170 175

Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr

180					185					190					
Gly	Ser	Ala	Leu	Cys	Asn	Ala	Gln	Arg	Trp	Leu	Asn	Phe	Gln	Gly	Asp
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Thr	Pro	Cys	Asn	Glu	Ser	Gln	Gly	Glu	Asp	Ser	Ala	Ala	Cys	Ser	Cys
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Gln	Asp	Cys	Ala	Ala	Ser	Cys	Pro	Val	Ile	Pro	Pro	Pro	Pro	Ala	Leu
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Arg	Pro	Ser	Phe	Tyr	Met	Gly	Arg	Met	Pro	Gly	Trp	Leu	Ala	Leu	Ile
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Glu	Ala	Pro	Asn	Leu	Pro	Arg	Lys	Arg	Arg	Phe	Ser	Pro	His	Thr	Val
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Ala	Pro	Lys	Ser	Gln	Ala	Arg	Lys	Glu	Lys	Ala	Phe	His	Asp	Glu	His
385					390					395					400
Phe	Gly	Pro	Phe	Phe	Arg	Thr	Asn	Gln	Ile	Phe	Val	Thr	Ala	Lys	Asn
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Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe  
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Ser Gly Ile Leu Ser Leu Asp Leu Leu Gln Glu Leu Leu Glu Leu Gln  
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Glu Arg Leu Arg His Leu Gln Val Trp Ser His Glu Ala Gln Arg Asn  
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Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro His Asn Thr  
 465 470 475 480

Ser Leu Thr Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn  
 485 490 495

Asn His Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln  
 500 505 510

Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala  
 515 520 525

Pro Leu Thr Tyr Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Ile Ala  
 530 535 540

Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln  
 545 550 555 560

Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Ile  
 565 570 575

Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala His Ala Lys Leu Trp  
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Glu Glu Ala Phe Leu Lys Glu Met Gln Ser Phe Gln Arg Ser Thr Ala  
 595 600 605

Asp Lys Phe Gln Ile Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu  
 610 615 620

Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Ile Ser Tyr  
 625 630 635 640

Leu Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg  
 645 650 655



Trp Ser Arg Val Ala Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly  
 660 665 670

Val Ala Val Val Leu Gly Ala Val Val Ala Ala Met Gly Phe Tyr Ser  
 675 680 685

Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe  
 690 695 700

Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu  
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Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile  
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Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu  
 740 745 750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Ser Met Pro Ala  
 755 760 765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Phe Asp Phe  
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Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys  
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Arg Gln Glu Ala Ser Arg Pro Asp Val Val Cys Cys Phe Ser Ser Arg  
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Asn Leu Pro Pro Pro Lys Gln Lys Glu Gly Leu Leu Leu Cys Phe Phe  
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Arg Lys Ile Tyr Thr Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val  
 835 840 845

Val Leu Leu Leu Phe Leu Val Leu Phe Gly Ala Asn Leu Tyr Leu Met  
 850 855 860

Cys Asn Ile Ser Val Gly Leu Asp Gln Asp Leu Ala Leu Pro Lys Asp  
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Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val  
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Gly Pro Pro Val Tyr Phe Asp Thr Thr Ser Gly Tyr Asn Phe Ser Thr  
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Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Glu Ser Phe  
 915 920 925

Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asn Gln Ser  
 930 935 940

Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp  
 945 950 955 960

Leu Thr Pro Ser Ser Ser Cys Cys Arg Ile Tyr Thr Arg Gly Pro His  
 965 970 975

Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys  
 980 985 990

Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr Thr Glu Gln  
 995 1000 1005

Phe His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Thr Pro Asn Ile  
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Arg Cys Pro Lys Gly Gly Leu Ala Ala Tyr Arg Thr Ser Val Asn  
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Leu Ser Ser Asp Gly Gln Ile Ile Ala Ser Gln Phe Met Ala Tyr  
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His Lys Pro Leu Arg Asn Ser Gln Asp Phe Thr Glu Ala Leu Arg  
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Ala Ser Arg Leu Leu Ala Ala Asn Ile Thr Ala Glu Leu Arg Lys  
 1070 1075 1080

Val Pro Gly Thr Asp Pro Asn Phe Glu Val Phe Pro Tyr Thr Ile  
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Ser Asn Val Phe Tyr Gln Gln Tyr Leu Thr Val Leu Pro Glu Gly  
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Ile Phe Thr Leu Ala Leu Cys Phe Val Pro Thr Phe Val Val Cys

1115		1120		1125
Tyr 1130	Leu Leu Gly Leu	Asp 1135	Ile Arg Ser Gly	Ile 1140
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Val 1160	Trp Gly Ile Ser Tyr	Asn 1165	Ala Val Ser Leu	Ile 1170
Thr 1175	Ala Val Gly Met Ser	Val 1180	Glu Phe Val Ser	His 1185
Ser 1190	Phe Ala Val Ser Thr	Lys 1195	Pro Thr Arg Leu	Glu 1200
Asp 1205	Ala Thr Ile Phe Met	Gly 1210	Ser Ala Val Phe	Ala 1215
Met 1220	Thr Asn Phe Pro Gly	Ile 1225	Leu Ile Leu Gly	Phe 1230
Gln 1235	Leu Ile Gln Ile Phe	Phe 1240	Phe Arg Leu Asn	Leu 1245
Leu 1250	Leu Gly Leu Leu His	Gly 1255	Leu Val Phe Leu	Pro 1260
Ser 1265	Tyr Leu Gly Pro Asp	Val 1270	Asn Gln Ala Leu	Val 1275
Lys 1280	Leu Ala Thr Glu Ala	Ala 1285	Met Val Ser Glu	Pro 1290
Gln 1295	Tyr Pro Phe Pro Ala	Asp 1300	Ala Asn Thr Ser	Asp 1305
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<220>

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Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr Cys	
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Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser Leu	
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Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg Leu	
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Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu Val	
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Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr Cys	
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His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg Val	
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Gly	Gln	Ala	Val	Gly	Ser	Gly	Ile	Gln	Pro	Leu	Asn	Glu	Gly	Val	Ala	
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Asp	Cys	Ala	Ala	Ser	Cys	Pro	Ala	Ile	Ala	Arg	Pro	Gln	Ala	Leu	Asp	
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Ile	Leu	Cys	Ser	Val	Phe	Ala	Val	Val	Thr	Ile	Leu	Leu	Val	Gly	Phe	
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Arg	Val	Ala	Pro	Ala	Arg	Asp	Lys	Ser	Lys	Met	Val	Asp	Pro	Lys	Lys	
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Thr	Ile	Leu	Val	Leu	Ser	Val	Ile	Pro	Val	Val	Ala	Leu	Ala	Ala	Gly	
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Leu	Val	Phe	Thr	Glu	Leu	Thr	Thr	Asp	Pro	Val	Glu	Leu	Trp	Ser	Ala	
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Pro	Asn	Ser	Gln	Ala	Arg	Ser	Glu	Lys	Ala	Phe	His	Asp	Gln	His	Phe	
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Gly	Pro	Phe	Phe	Arg	Thr	Asn	Gln	Val	Ile	Leu	Thr	Ala	Pro	Asn	Arg	
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Ser	Ser	Tyr	Arg	Tyr	Asp	Ser	Leu	Leu	Leu	Gly	Pro	Lys	Asn	Phe	Ser	
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tcc ctg cag gac atc tgc tac gcc ccc ctc aat ccg gac aat acc agt Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr Ser 470 475 480	1499
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Gln	Arg	Leu	Pro	Arg	Arg	Pro	Gly	Glu	Pro	Arg	Glu	Val	His	Ile	Gly	
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Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg  
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Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu  
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Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg  
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Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr  
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Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln  
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Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg  
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Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr  
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Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp  
 195 200 205

Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu  
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Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val  
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Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys  
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Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu  
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Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile

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Tyr Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile  
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Gly Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu  
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Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser  
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&lt;211&gt; 4471

&lt;212&gt; DNA

&lt;213&gt; Mus musculus

&lt;400&gt; 45

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<211> 3996

<212> DNA

<213> Homo sapiens

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<223> n is g or a or t or c

<400> 51

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ytn caytgga thacnmnggg ngtn gtnytn ytnytn ttyy tngcnytn tt yggngtnwsn	2580
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wsntayytny tngaytaytt yytn ttyytn aaymgntayt tygargtn gg ngcncngtn	2700
tayttygtna cnacnytn gg ntayaaytty wsnwsngarg cnggnatgaa ygcna thtgy	2760
wsnwsngcng gntgyaayaa yttywsntty acncaraara thcartaygc nacngartty	2820
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aayathaart gyccnaargg nggnytnngcn gentaywsna cnwsngtnaa yytnacnwsn	3120
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gaytayaacng argcnytnmg ngcngcnmgn garytnngcn cnaayathac ngcngayytn	3240
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ttytaygarc artayytnac nathytnccn garggnytn tyatgytnws nytntggytn	3360
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athwsntaya aygcnngtnws nytnathaay ytnngtnwsng cngtnngnat gwsngtngar	3540
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acngcngaya ayathtaygt naaycaywsn ttygarggnw snathaargg ngcngngcn	3960
athwsnaayt tyytnccnaa yaayggnmgn cartty	3996